



Architectural drawing by Titus deBobula shows Tesla's high potential terminal and powerhouse. This illustration was included with his death ray weapon proposal.

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Tesla explained in many articles about experiments or inventions that could produce effects at considerable distances. He described different phenomena which seems to have different nature between each other. Despite his statements about this concepts have never been demonstrated today there exist the concept of "directed energy weapons" which is applied in different weapons for the military defence "to produce effects at distance".

[Tesla's Latest Results – He Now Produces Radiographs at a Distance of More Than Forty Feet](#) - Electrical Review - March 18th, 1896:

*"I am producing strong shadows at distances of 40 feet. I repeat, 40 feet and even more. Nor is this all. So strong are the actions on the film that provisions must be made to guard the plates in my photographic department, located on the floor above, a distance of fully 60 feet, from being spoiled by long exposure to the stray rays. Though during my investigations I have performed many experiments which seemed extraordinary, I am deeply astonished observing these unexpected manifestations, and still more so, as even now I see before me the possibility, not to say certitude, of augmenting the effects with my apparatus at least tenfold!"*

*"These effects upon the sensitive plate at so great a distance I attribute to the employment of a bulb with a single terminal, which permits the use of practically any desired potential and the attainment of extraordinary speeds of the projected particles. With such a bulb it is also evident that the action upon a fluorescent screen is proportionately greater than when the usual kind of tube is employed, and I have already observed enough to feel sure that great developments are to be looked for in this direction".*

Today we know that X-rays are a form of invisible, high frequency electromagnetic radiation with wavelength between 10 and 0.01 nanometres, corresponding to a frequency of 30 PHz to 3 E Hz. They are produced by accelerating electrons at a metal target. In medical application, this is Tungsten (95%), Rhenium (5%), or Molybdenum. X rays are used in various medical applications.

**concentrated non-dispersive energy through natural media - Briefly Exposed by Nikola Tesla - Circa May 16, 1935**

- ▶ **News on directed energy weapons**
- ▶ **Nazi developed Particle Beam Weapon & electric gun/cannon**
- ▶ **Videos/documentaries on secret weapons & the death ray & directed energy weapons**

In 1907, when commenting on the destruction of the French ship Iena, Tesla noted in a letter to the New York Times that he has built and tested remotely controlled torpedoes, but that electrical waves would be more destructive:

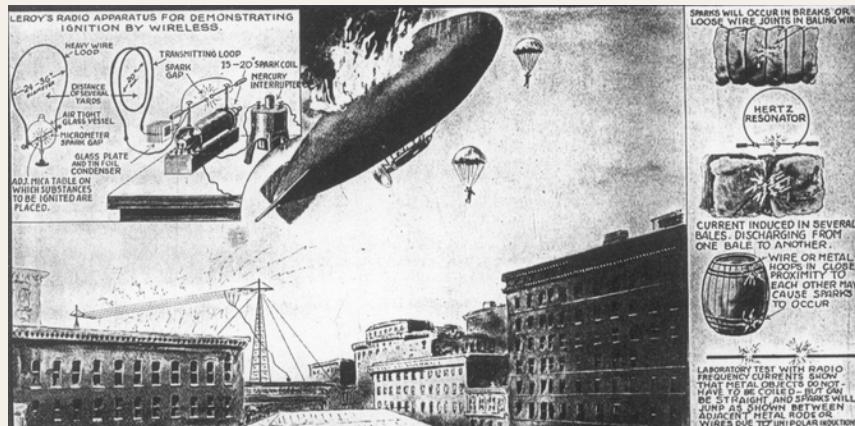
*"As to projecting wave energy to any particular region of the globe, this can be done by my devices," he wrote. Further, he claimed that "the spot at which the desired effect is to be produced can be calculated very closely, assuming the accepted terrestrial measurements to be correct."*

In 1908 Tesla repeated the idea of destruction by electrical waves to the newspaper on April 21st His letter to the editor stated:

*"When I spoke of future warfare I meant that it should be conducted by direct application of electrical waves without the use of aerial engines or other implements of destruction." He added: "This is not a dream. Even now wireless power plants could be constructed by which any region of the globe might be rendered uninhabitable without subjecting the population of other parts to serious danger or inconvenience."*

Again in 1915, in another letter to the editor, Tesla stated:

*"It is perfectly practical to transmit electrical energy without wires and produce destructive effects at a distance. I have already constructed a wireless transmitter which makes this possible. When unavoidable, the [transmitter] may be used to destroy property and life."*



Can Radio Ignite Balloons? - Electrical Experimenter - October 1, 1919

Courtesy of Tesla Collection - <http://teslacollection.com/>

# TESLA'S NEW DEVICE LIKE BOLTS OF THOR

**He Seeks to Patent Wireless Engine for Destroying Navies  
by Pulling a Lever.**

**TO SHATTER ARMIES ALSO**

A New York Times headline from December 8th, 1915

[Tesla's Views on Electricity and the War](#) - The Electrical Experimenter - August, 1917:

"At the time of those tests I succeeded in producing the most powerful X-rays ever seen. I could stand at a distance of 100 feet from the X-ray apparatus and see the bones of the hand clearly with the aid of a fluoroscope screen; and I could have easily seen them at a distance several times this by utilizing suitable power. In fact, I could not then procure X-ray generators to handle even a small fraction of the power I had available. But I now have apparatus designed whereby this tremendous energy of hundreds of kilowatts can be successfully transformed into X-rays."

By the same month Tesla outlined a concept for primitive radar-like units. He stated:

*"...by their [electromagnetic waves] use we may produce at will, from a sending station, an electrical effect in any particular region of the globe; [with which] we may determine the relative position or course of a moving object, such as a vessel at sea, the distance traversed by the same, or its speed".*

Tesla's 1917 proposal for Directed Energy submarine warfare ([Tesla's Views on Electricity and the War](#) - The Electrical Experimenter - August, 1917 and [New Yankee Tricks to Circumvent the U-Boat](#) - The Fort Wayne Journal-Gazette, Fort Wayne, Indiana - August 19, 1917):

*"I believe the magnetic method of locating or indicating the presence of an iron or steel mass might prove very practical in locating a hidden submarine. And it is of course of paramount importance that we do find a means of accurately locating the sub-sea fighters when they are submerged, so that we can, with this information, be ready to close in on them when they attempt to come to the surface. Especially is this important when several vessels are traveling in fleet formation; the location and presence of the enemy submarine can be radiographed to the other vessels by the one doing the magnetic surveying and, by means of nets in some cases, or gunfire and the use of hydro-aeroplanes sent aloft from the ships, the enemy under water stands a mighty good chance of being either 'bombed,' shelled or netted.*

*"However, a means would soon be found of nullifying this magnetic detector of the submerged undersea war-craft. They might make the 'U-boat' hulls of some non-magnetic metal, such as copper, brass, or aluminum. It is a good rule to always*

*keep in mind that for practically every good invention of such a kind as this, there has always been invented an opposite, and equally efficient counteracting invention."*

*"Now suppose that we erect on a vessel a large rectangular helice or inductance coil of insulated wire. Actual experiments in my laboratory at Houston Street (New York City) have proven that the presence of a local iron mass such as the ship's hull would not interfere with the action of this device. To this coil of wire, measuring perhaps 400 feet in length by 70 feet in width (the breadth of the ship), we connect a source of extremely high frequency and very powerful oscillating current. By this means there are radiated powerful oscillating electro-static currents, which as I have found by actual experiment in my Colorado tests some years ago, will first affect a metallic body (such as a submarine hull, even though made of brass or any other metal), and in turn cause that mass to react inductively on the exciting coil on the ship. To locate an iron mass, it is not necessary to excite the coil with a high frequency current; the critical balance of the coil will be affected simply by the presence of the magnetic body. To be able to accurately determine the direction and range of the enemy submarine, four exciting inductances should be used. With a single inductance, however, it would be possible to determine the location of a submarine by running the ship first in one direction and then in another, and noting whether the reactance effect caused by the presence of the submarine hull increased or decreased. The radiating inductance must be very sharply attuned to the measuring apparatus installed on the ship, when no trouble will be found in detecting the presence of such a large metallic mass as a submarine, even at a distance of 5 to 6 miles; of this I feel confident from my past experiments in the realm of ultra-high frequency currents and potentials."*

Tesla was incorrect in his assumption that high frequency radio waves would penetrate water but [Émile Girardeau](#), who helped develop France's first radar system in the 1930s, noted in 1953 that Tesla's general speculation that a very strong high frequency signal would be needed was correct stating:

*"(Tesla) was prophesying or dreaming, since he had at his disposal no means of carrying them out, but one must add that if he was dreaming, at least he was dreaming correctly."*

On July 11, 1934 the inventor described a new weapon for first time in the New York Sun and The New York Times as being able to be used against ground-based infantry or for anti-aircraft purposes. The press called it a "peace ray" or death ray.

Tesla announced to the world two astonishing new inventions. The first was a particle-beam projector that Tesla intended to be used as an instrument of national defense. He called his system "teleforce." With this machine he declared that a nation could bring wholesale destruction upon invading armies and shoot down fleets of incoming aircraft at a distance of 200 miles (400 km) away. While the basic beam weapon concept was first revealed in 1934, on Tesla's 78th birthday, specific details about the actual device have been difficult to obtain.

One year later, during his annual birthday press conference on July 10, 1935, Tesla claimed a method to transmit mechanical energy with minimal loss over any terrestrial distance, allowing for a new means of communication and a technique for the location of subterranean mineral deposits. Tesla's mechanical power transmission system, he dubbed it the "art of telegeodynamics," was based primarily upon his reciprocating engine invention, patented in 1894. While the fundamental operating principles of Tesla's mechanical oscillator are well understood, little has been said about how the machine would have been used for underground prospecting.

In Leland Anderson's newest book "[Nikola Tesla's Teleforce & Telegeodynamics Proposals](#)" these two important papers, hidden for more than 60 years, are presented for the first time. The principles behind teleforce the particle-beam weapon, and telegeodynamics the mechanical earth-resonance concept for seismic exploration, are fully addressed. In addition to copies of the original documents, typed on Tesla's official stationery, this work also includes two Reader's Aid sections that guide the reader through the more technical aspects of each paper. The papers are followed by Commentary sections which provide historical background and functional explanations of the two devices. Significant newspaper articles and headline accounts are provided to document the first mention of these proposals. A large Appendix provides a wealth of related material and background information, followed by a Bibliography section and Index.



Postcard illustration of the Hotel New Yorker, New York City. (Collection of The New-York Historical Society)

Tesla announced his new beam weapon in numerous newspaper interviews on his seventy-eighth birthday

In 1934 Tesla moved to his final residence, room 3327 (still divisible by three) of the recently completed Hotel New Yorker. There he lived alone with his ideas and his pigeons for the next decade. He posted a typewritten note on the door: "Please Do Not Disturb The Occupant Of This Room."

In Tesla's mind, it was time to reveal his greatest invention: a perfect and impossible idea, a weapon to prevent World War II.

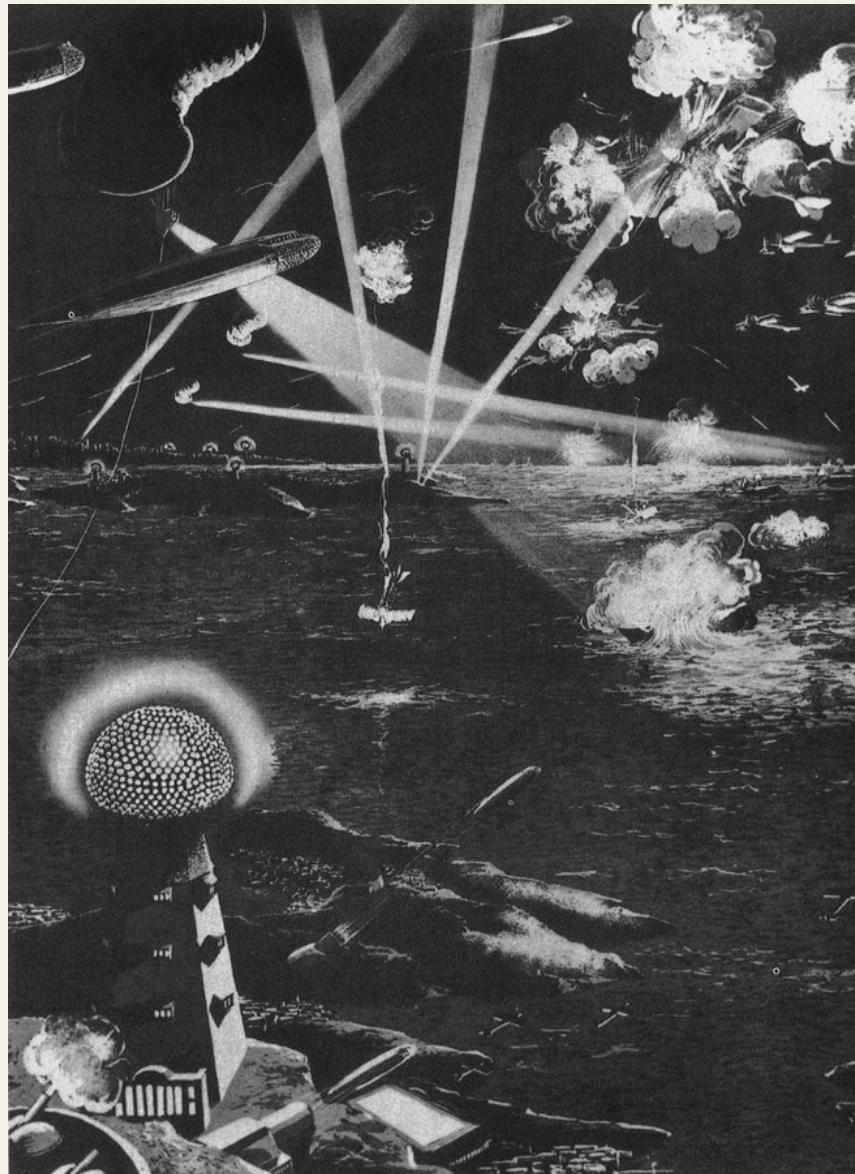
On July 11, 1934, the headline on the front page of The New York Times announced: "[Tesla at 78 bares new death beam](#)"

*"Will send concentrated beams of particles through the free air, of such tremendous energy that they will bring down a fleet of 10,000 enemy airplanes at a distance of 250 miles (400 km) from a defending nation's border and will cause armies of millions to drop dead in their tracks."*

*"When put in operation, Dr. Tesla said, this latest invention of his would make war impossible. This death-beam, he asserted would surround each country like an invisible Chinese wall, only a million times more impenetrable. It would make every nation impregnable against attack by airplanes or by large invading armies".*

Joseph Butler, a U.S. Air Force expert on beam weapons, has said of Tesla's idea, "Definitely, he had the concept of a charged particle beam weapon back in the 1930s. The concept was right on the mark ... particles projected out long distances to do

damage to some enemy airplanes, in his particular case." But Butler added, "I haven't a clue how he meant to actually do it" (interview with the authors, 1998).



Tesla's concept of future warfare: Tesla tower in action supplying and directing war machines from distances of hundreds or even thousands of miles away.

The inventor envisioned war in the future as a "mere contest" between machines. This concept was illustrated by Paul Frank and appeared in *Science and Invention*, February 1922.

Sensing a business opportunity, Tesla commissions architect Titus deBobula in 1934 to draw plans of what the new particle beam weapon towers might look like and contacts several governments around the world to try to sell his plans.

## Principles and concepts of Tesla's "death ray"

[Beam to Kill Army at 200 Miles, Tesla's Claim on 78th Birthday](#) - New York Herald Tribune - July 11, 1934:

*"First and most important is a **mechanism for producing rays and other energy manifestations in free air**. Hitherto vacuum tubes have always been necessary. Second is an **apparatus for producing unheard-of quantities of electrical current and for controlling it when produced**. The current is necessary as power for the first mechanism. Without this, no rays of sufficient strength could be produced. The third is a **method of intensifying and amplifying the second process**, and the fourth is a **method of producing "tremendous electrical repellent force"**.*

On July 23, 1934 Time Magazine wrote an article about Tesla's Ray:

*"Last week Dr. Tesla announced a combination of four inventions which would make war unthinkable.*

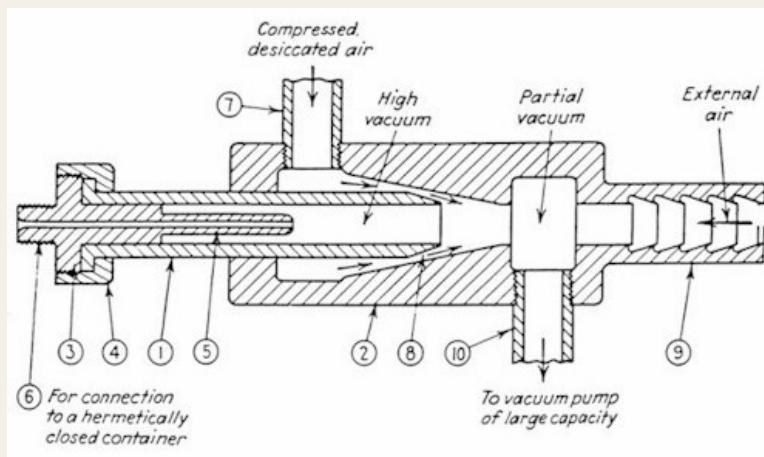
*Nucleus of the idea is a death ray - a concentrated beam of sub-microscopic particles flying at velocities approaching that of light. The beam, according to Tesla, would drop an army in its tracks, bring down squadrons of airplanes 250 miles away. Inventor Tesla would discharge the ray by means of*

1. a device to nullify the impeding effect of the atmosphere on the particles,
2. a method for setting up high potential,
3. a process for amplifying that potential to 50.000.000 volts,
4. creation of "a tremendous electrical repelling force."

[http://www.tfcbooks.com/teslafaq/q&a\\_011.htm](http://www.tfcbooks.com/teslafaq/q&a_011.htm)

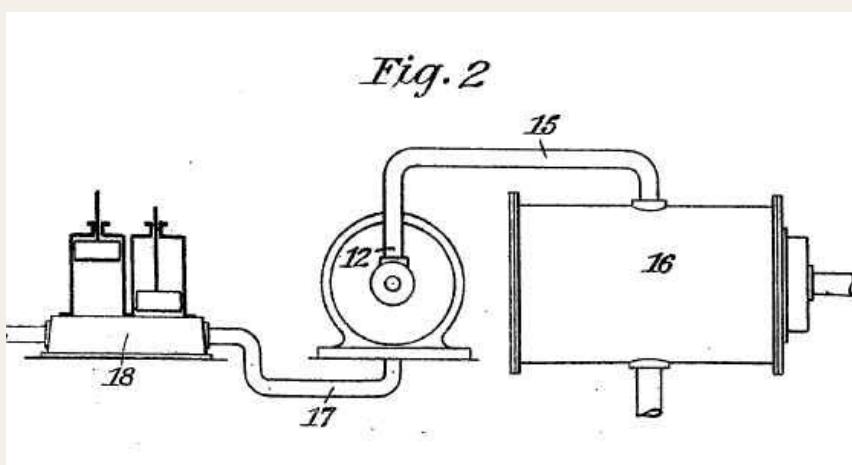
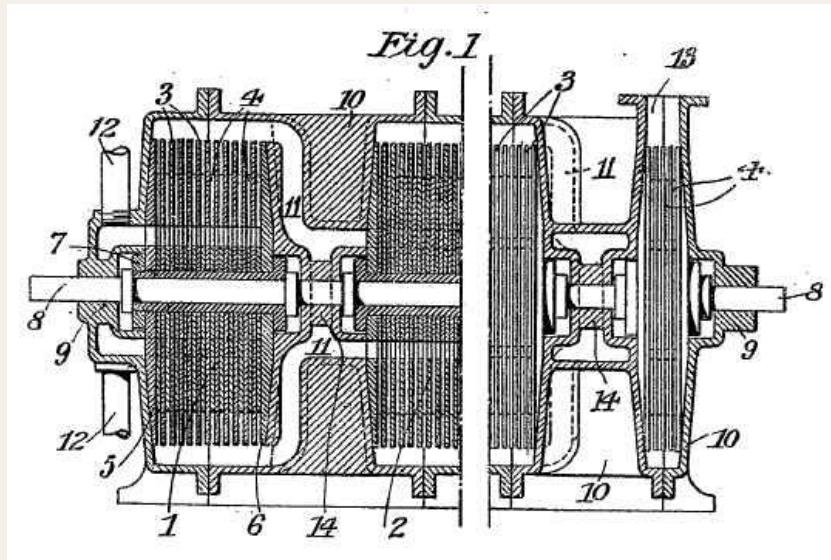
According to Tesla production of the particle beam is dependent upon the following four inventions (For more details see also: "[The new art of projecting concentrated non-dispersive energy through natural media](#)"):

**1-.**A method and apparatus for producing rays and other manifestations of energy in free air, eliminating the high vacuum necessary at present for the production of such rays and beams. This is accomplished with a novel form of high vacuum tube, one end of which is open to the atmosphere. The projectiles are accelerated in a vacuum and then conducted into the atmosphere through a valvular conduit.

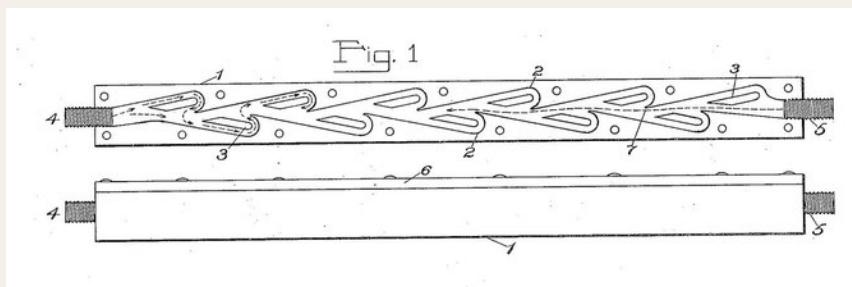


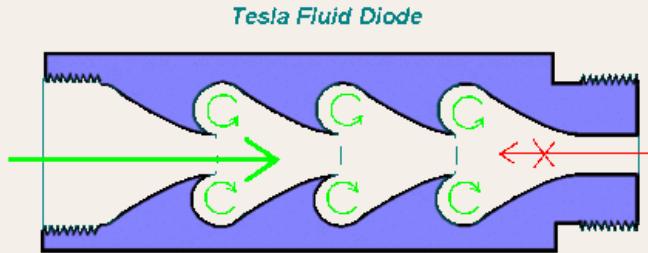
Modified open vacuum tube

- GB179,043 - [Improved process and apparatus for production of high vacua](#) -  
March 24, 1921

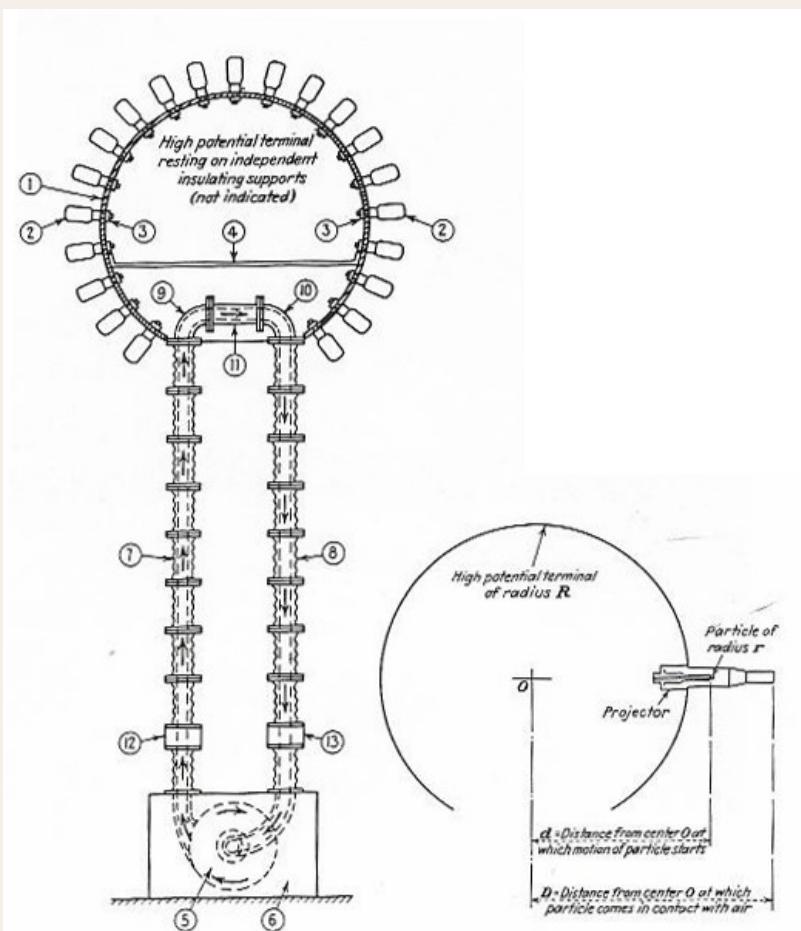


- 1,329,559 [Valvular Conduit](#), February 3, 1920



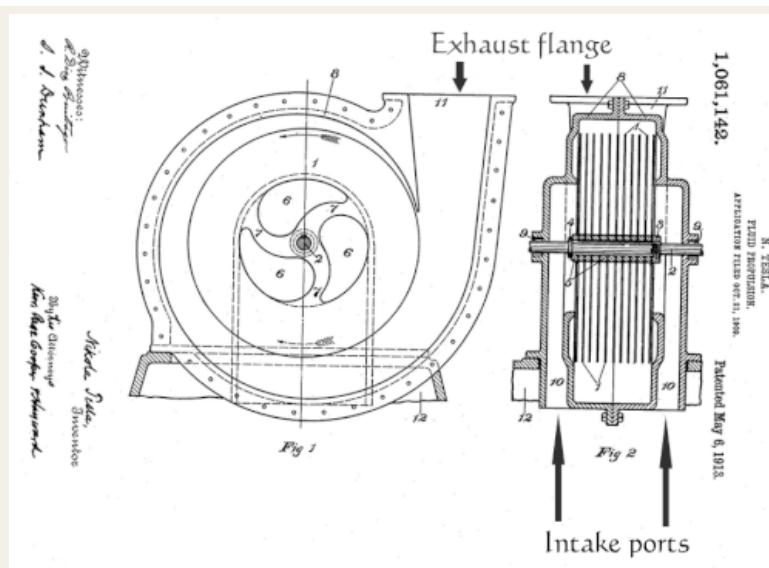


**2-.A** method and process for producing very great electrical force in the range of 60,000,000 volts to propel the particles to their objective. Tesla specified that this could be done with a large electrostatic generator on a new principle and of very great power, in many respects similar to a Van de Graaff generator. In place of a charge-carrying belt it employs a circulating stream of desiccated air that is propelled through a hermetically sealed ductwork by a Tesla disc blower. A Wardenclyffe type apparatus could also be used for this purpose.

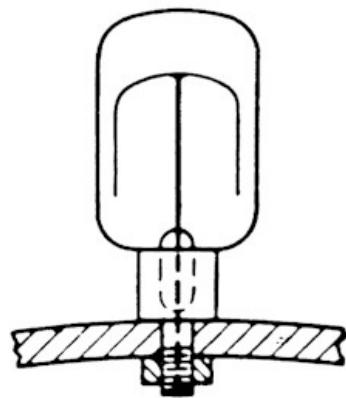


SCHEMATIC ILLUSTRATION OF NEW HIGH POTENTIAL GENERATOR & SPHERICAL TERMINAL AND AN OPEN VACUUM TUBE

- US1,061,142 - [Fluid Propulsion](#) - April 29, 1913



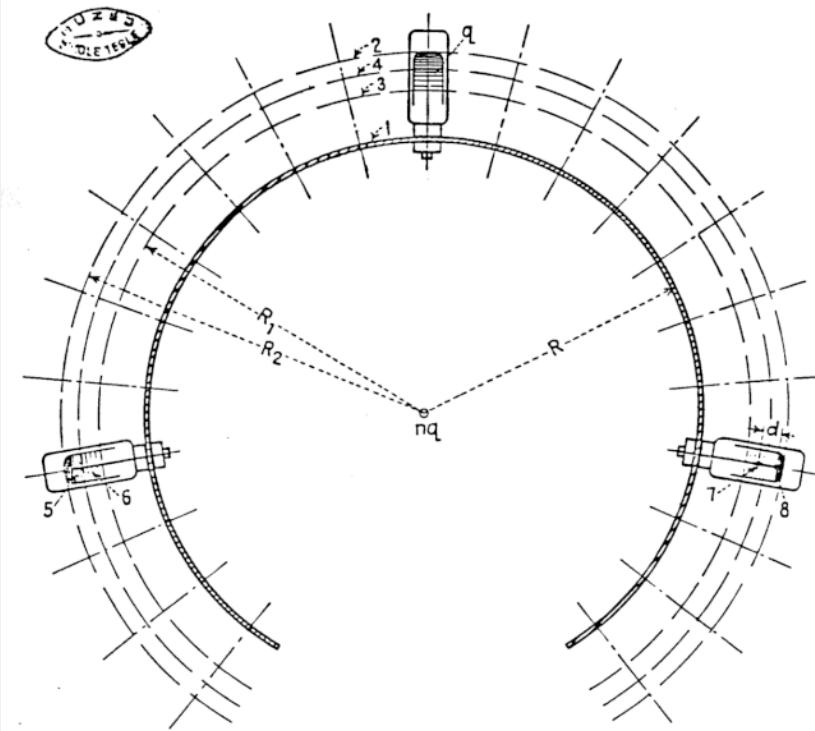
**3.-**A method for amplifying this process in the second invention. The exterior of the high potential terminal is equipped with numerous bulbs of some insulating material each containing, —an electrode of thin metal sheet suitably rounded— and — exhausted to the highest vacuum obtainable.—



**Enlarged View of One  
of the Attachments**

NEW TERMINAL FOR EXCEEDINGLY HIGH POTENTIALS  
CONSISTING OF SPHERICAL FRAME ATTACHMENTS

## DIAGRAM INDICATING DISTRIBUTION OF CHARGES



**4.**-A new method for producing a tremendous electrical repelling force in the form of —provisions for imparting to a minute particle an extremely high charge.— It appears this refers to the internal conducting component (the socket and central extension) at the base of the projector or gun element of the system. While the specific details about this aspect of the design are not readily apparent, it seems that strict attention to the fulfillment of requirements 1, 2 and 3 is critical to success. In Tesla's words, *"by the application of my discoveries it is possible to increase the force of repulsion more than a million times and what was heretofore impossible is rendered easy of accomplishment".*—[1, 2]

His idea was probably to use a gigantic electrostatic generator run by one of his turbines to accelerate tiny particles of mercury until they became a stream of super high-powered bullets of several million volts. Since they were accelerated in a vacuum, Tesla needed a way to spit them out of the accelerator sphere without letting air in. He proposed to do this with the special nozzle which blew high-pressure air around an open tube leading to the evacuated sphere and acted like a constantly renewing plug to preserve the vacuum. What happens to the mercury stream after it left the nozzle and had to travel through the atmosphere was another matter that was never quite figured out.

In the death ray proposal, Tesla used the term "particles" but in this case he did not mean atomic particles like protons, neutron... etc but he meant microscopic droplets accelerated in an electron tube and by the action of the repulsion of the electrostatic force.

[The Inventions, Researches and Writings of Nikola Tesla](#) - by Thomas Commerford Martin, Editor - 1894:

*The electrostatic attractions and repulsions between bodies of measurable dimensions are, of all the manifestations of this force, the first so-called electrical phenomena noted. But though they have been known to us for many centuries, the precise nature of the mechanism concerned in these actions is still unknown to us, and has not been even quite satisfactorily explained. What kind of mechanism must that be? We cannot help wondering when we observe two magnets attracting and repelling each other with a force of hundreds of pounds with apparently nothing between them. We have in our commercial dynamos magnets capable of sustaining in mid-air tons of weight. But what are even these*

[Pg 326]

*forces acting between magnets when compared with the tremendous attractions and repulsions produced by electrostatic force, to which there is apparently no limit as to intensity. In lightning discharges bodies are often charged to so high a potential that they are thrown away with inconceivable force and torn asunder or shattered into fragments. Still even such effects cannot compare with the attractions and repulsions which exist between charged molecules or atoms, and which are sufficient to project them with speeds of many kilometres a second, so that under their violent impact bodies are rendered highly incandescent and are volatilized. It is of special interest for the thinker who inquires into the nature of these forces to note that whereas the actions between individual molecules or atoms occur seemingly under any conditions, the attractions and repulsions of bodies of measurable dimensions imply a medium possessing insulating properties. So, if air, either by being rarefied or heated, is rendered more or less conducting, these actions between two electrified bodies practically cease, while the actions between the individual atoms continue to manifest themselves.*

*An experiment may serve as an illustration and as a means of bringing out other features of interest. Some time ago I showed that a lamp filament or wire mounted in a bulb and connected to one of the terminals of a high tension secondary coil is set spinning, the top of the filament generally describing a circle. This vibration was very energetic when the air in the bulb was at ordinary pressure and became less energetic when the air in the bulb was strongly compressed. It ceased altogether when the air was exhausted so as to become comparatively good conducting. I found at that time that no vibration took place when the bulb was very highly exhausted. But I conjectured that the vibration which I ascribed to the electrostatic action between the walls of the bulb and the filament should take place also in a highly exhausted bulb. To test this under conditions which were more favorable, a bulb like the one in Fig. 174, was constructed. It comprised a globe b, in the neck of which was sealed a platinum wire w carrying a thin lamp filament f. In the lower part of the globe a tube t was sealed so as to surround the filament. The exhaustion was carried as far as it was practicable with the apparatus employed.*

*This bulb verified my expectation, for the filament was set spinning when the current was turned on, and became incandescent.*

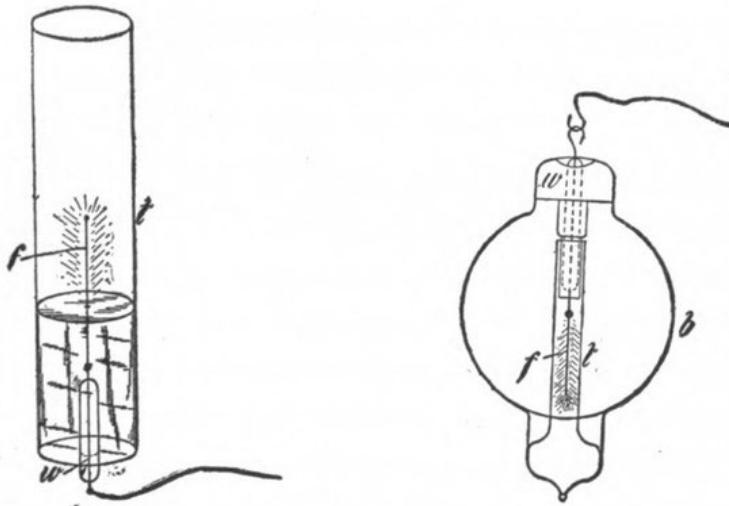


Fig. 173. &amp; Fig. 174.

[Pg 327]

cent. It also showed another interesting feature, bearing upon the preceding remarks, namely, when the filament had been kept incandescent some time, the narrow tube and the space inside were brought to an elevated temperature, and as the gas in the tube then became conducting, the electrostatic attraction between the glass and the filament became very weak or ceased, and the filament came to rest. When it came to rest it would glow far more intensely. This was probably due to its assuming the position in the centre of the tube where the molecular bombardment was most intense, and also partly to the fact that the individual impacts were more violent and that no part of the supplied energy was converted into mechanical movement. Since, in accordance with accepted views, in this experiment the incandescence must be attributed to the impacts of the particles, molecules or atoms in the heated space, these particles must therefore, in order to explain such action, be assumed to behave as independent carriers of electric charges immersed in an insulating medium; yet there is no attractive force between the glass tube and the filament because the space in the tube is, as a whole, conducting.

It is of some interest to observe in this connection that whereas the attraction between two electrified bodies may cease owing to the impairing of the insulating power of the medium in which they are immersed, the repulsion between the bodies may still be observed. This may be explained in a plausible way. When the bodies are placed at some distance in a poorly conducting medium, such as slightly warmed or rarefied air, and are suddenly electrified, opposite electric charges being imparted to them, these charges equalize more or less by leakage through the air. But if the bodies are similarly electrified, there is less opportunity afforded for such dissipation, hence the repulsion observed in such case is greater than the attraction. Repulsive actions in a gaseous medium are however, as Prof. Crookes has shown, enhanced by molecular bombardment.

In some moment of his life, Tesla believed in the possibility of the atomic energy as a source of energy, but after some years he stated just the opposite as a result of his unsuccessful experiments of "accelerating and crushing atomic particles". For this reason it is supposed that some kind of particle accelerator would be necessary to develop such experiments, however the details are unknown. The utilization of electron

tubes (or cathode tubes) is described in some articles and interviews about Tesla's "death ray".

[Harnessing Nature - Can The Free Energy Of Space Be Utilized?](#) - Scientific American - April 5, 1913

*"Experiments conducted by Mr. Nikola Tesla with electromotive forces of 2.000.000 volts have **convinced him that if 100.000.000 volts could be produced it might be possible to break down the atomic structure of any element and thus liberate a certain amount of energy.** "But," he told the writer of this article, "even if the feat could be accomplished and sufficient energy set free, there still remains the enormously difficult problem of devising a means of utilizing the energy in a practical way."*

[Tesla, 75, Predicts New Power Source](#) - New York Times - July 5th, 1931

*"When and where do you expect to make the official announcement of your new discoveries?" the inventor was asked.*

*"These discoveries," he replied, "did not come to me over night, but as the result of intense study and experimentation for nearly thirty-six years. I am naturally anxious to give the facts to the world as soon as possible, but I also wish to present them in a finished form. That may take a few months or a few years."*

*"The idea of atomic energy is illusionary but it has taken so powerful a hold on the minds, that although I have preached against it for twenty-five years, there are still some who believe it to be realizable."*

*"I have disintegrated atoms in my experiments with a **high potential vacuum tube I brought out in 1896**, which I consider one of my best inventions. **I have operated it with pressures ranging from 4,000,000 to 18,000,000 volts.** **More recently I have designed an apparatus for 50,000,000 volts which should produce many results of great scientific importance.***

*"But as to atomic energy, **my experimental observations have shown that the process of disintegration is not accompanied by a liberation of such energy** as might be expected from the present theories."*

[Aerial defense "death beam" offered to U.S by Tesla](#) - The Baltimore Sun - July 12, 1940.

***The voltages for propelling the death beam to its objective, he stated, will attain a potential of 50.000.000.***

***With this enormous voltage, he said, microscopic particles of matter will be catapulted on their mission of defensive destruction.***

[Beam to Kill Army at 200 Miles, Tesla's Claim on 78th Birthday](#) - New York Herald Tribune - July 11, 1934:

***"It Is an Electric Gun***

*The beam of force itself, as Dr. Tesla described it, is a concentrated current - it need be no thicker than a pencil - of microscopic particles moving at several*

*hundred times the speed of artillery projectiles. The machine into which Dr. Tesla combines his four devices is, in reality, a sort of electrical gun.*

*He illustrated the sort of thing that the particles will be by recalling an incident that occurred often enough when he was experimenting with a **cathode tube**. Then, sometimes, a particle larger than an electron, but still very tiny, would break off from the cathode, pass out of the tube and hit him. He said he could feel a sharp, stinging pain where it entered his body, and again at the place where it passed out. **The particles in the beam of force, ammunition which the operators of the generating machine will have to supply, will travel far faster than such particles as broke off from the cathode**, and they will travel in concentrations, he said.*

*As Dr. Tesla explained it, **the tremendous speed of the particles will give them their destruction-dealing qualities**. All but the thickest armored surfaces confronting them would be melted through in an instant by the heat generated in the concussion".*

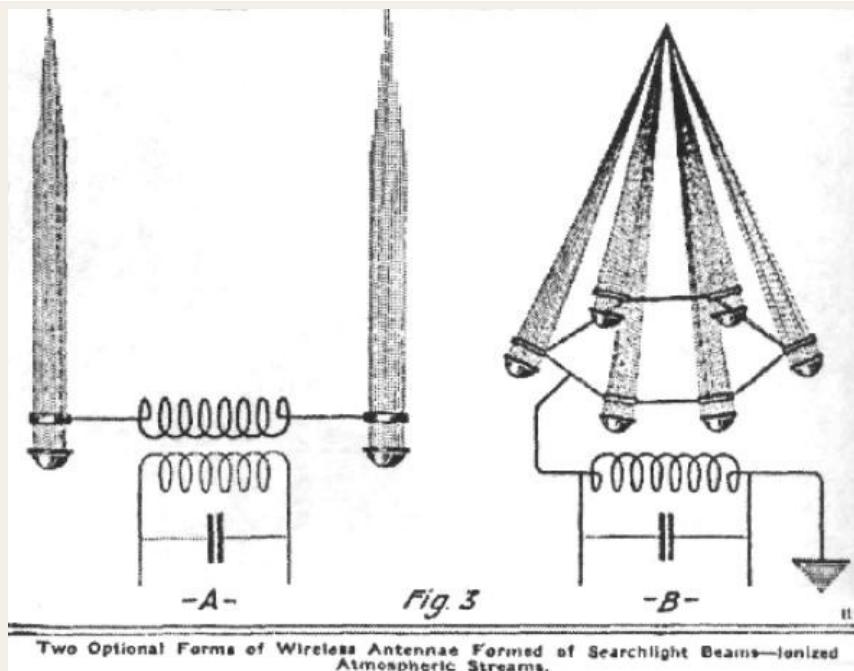
*"I should also say, and this is perhaps as important as anything else about it, that in this apparatus all limitations as to electric force and the quantity of electricity transmitted have been removed."*

[Prepared Statement of Tesla](#) (For interview with press on 81st birthday observance):

*There is one more discovery which I want to announce at this time, consisting of a new method and apparatus for the obtainment of vacua exceeding many times the highest heretofore realized. I think that as much as one-billionth of a micron can be attained. What may be accomplished by means of such vacua is a matter of conjecture, but it is obvious that they will make possible the production of much more intense effects in **electron tubes**. My ideas regarding the electron are at variance with those generally entertained. **I hold that it is a relatively large body carrying a surface charge and not an elementary unit. When such an electron leaves an electrode of extremely high potential and in very high vacuum, it carries an electrostatic charge many times greater than the normal.** This may astonish some of those who think that the particle has the same charge in the tube and outside of it in the air. A beautiful and instructive experiment has been contrived by me showing that such is not the case, for **as soon as the particle gets out into the atmosphere it becomes a blazing star owing to the escape of the excess charge. The great quantity of electricity stored on the particle is responsible for the difficulties encountered in the operation of certain tubes and the rapid deterioration of the same.***

[Proposing the "death ray" for defense](#) - Philadelphia Inquirer - October 20, 1940:

*"It is based on an entirely new principle of physics that nobody ever has dreamed of. **It is different from the principle embodied in my inventions relating to the transmission of electrical power from a distance**, for which I hold a number of basic patents."*



Illustrations from an article in the March, 1920 issue of Electrical Experimenter entitled "Wireless Transmission of Power Now Possible". The illustrations show his prototype devices for "directed ionized beam transmissions," a "deathray—searchlight" device. But according to Tesla, the results of tests did not justify the hope of important practical applications in large distance.

*"After preliminary laboratory experiments, I made tests on a large scale with the transmitter referred to and a beam of ultra-violet rays of great energy in an attempt to conduct the current to the high rarefied strata of the air and thus create an auroral display such as might be utilized for illumination, especially of oceans at night. I found that there was some virtue in the principal but the results did not justify the hope of important practical applications although, some years later, several inventors claimed to have produced a "death ray" in this manner. While the published reports to this effect were entirely unfounded, I believe that with the new transmitter to be built, many wonders will be achieved".*

A Machine to End War - Liberty - February 1937:

*My discovery ends the menace of airplanes or submarines, but it insures the supremacy of the battleship, because battleships may be provided with some of the required equipment. There might still be war at sea, but no warship could successfully attack the shore line, as the coast equipment will be superior to the armament of any battleship.*

*I want to state explicitly that this invention of mine does not contemplate the use of any so-called "death rays." Rays are not applicable because they cannot be produced in requisite quantities and diminish rapidly in intensity with distance. All the energy of New York City (approximately two million horsepower) transformed into rays and projected twenty miles, could not kill a human being, because, according to a well known law of physics, it would disperse to such an extent as to be ineffectual.*

***My apparatus projects particles which may be relatively large or of microscopic dimensions, enabling us to convey to a small area at a great***

*distance trillions of times more energy than is possible with rays of any kind. Many thousands of horsepower can thus be transmitted by a stream thinner than a hair, so that nothing can resist. This wonderful feature will make it possible, among other things, to achieve undreamed-of results in television, for there will be almost no limit to the intensity of illumination, the size of the picture, or distance of projection.*

*I do not say that there may not be several destructive wars before the world accepts my gift. I may not live to see its acceptance. But I am convinced that a century from now every nation will render itself immune from attack by my device or by a device based upon a similar principle.*

At the age of 81, at a luncheon in his honor, concerning the Death Ray, Tesla stated:

*"But it is not an experiment.... I have built, demonstrated and used it. Only a little time will pass before I can give it to the world."*

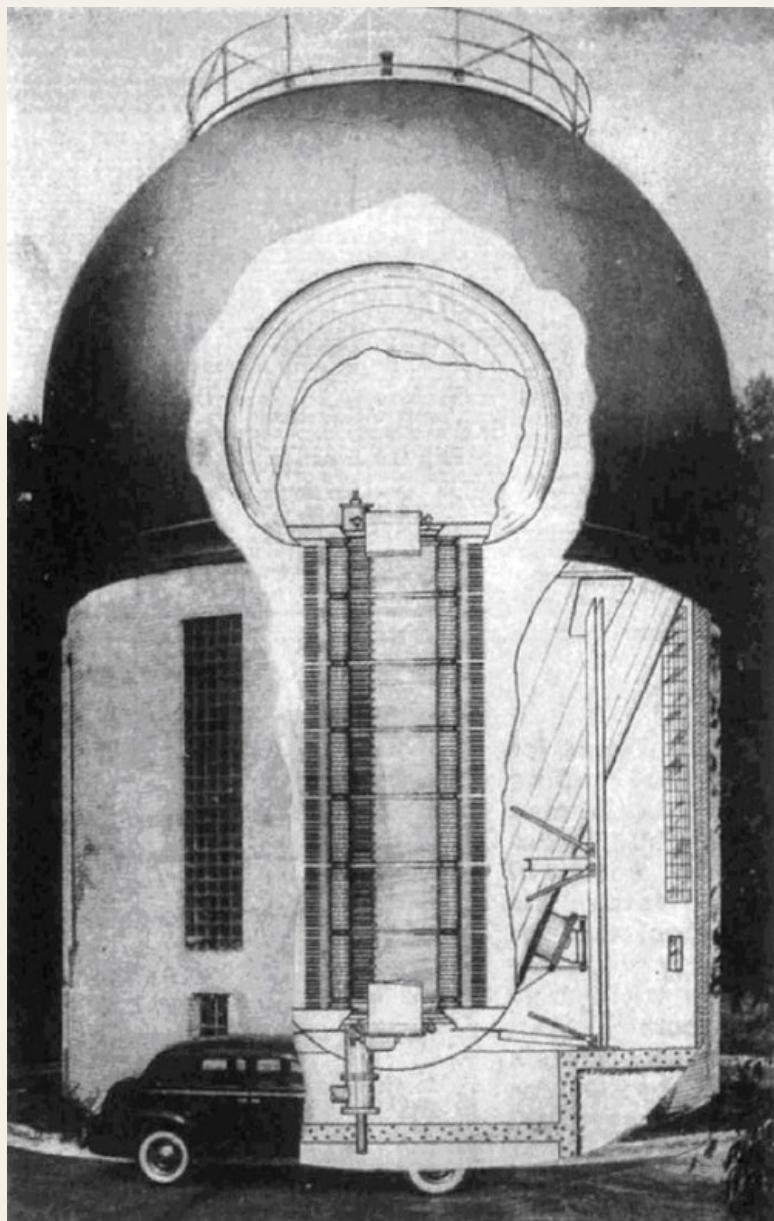
## History of particle accelerators

There are two basic classes of accelerators: electrostatic and oscillating field accelerators. Electrostatic accelerators use static electric fields to accelerate particles. A small-scale example of this class is the cathode ray tube in an ordinary old television set. Other examples are the Cockcroft-Walton generator and the Van de Graaff generator. The achievable kinetic energy for particles in these devices is limited by electrical breakdown. Oscillating field accelerators, on the other hand, use radio frequency electromagnetic fields to accelerate particles, and circumvent the breakdown problem. This class, which was first developed in the 1920s, is the basis for all modern accelerator concepts and large-scale facilities.

To be able to go deeper into the secrets of the structure of matter, the physicists found that they had to "crush", "hit" or "disturb" the atomic particles with the maximum energy as possible. In 1911 Rutherford achieved to elaborate an atomic model by the help of a projectile of certain energy: the  $\alpha$  particles (alpha particles). During a long period of time such particles were the unique method to disturb the microcosmos in a controlled way; but for the only way to produce them, it was necessary some kind of material which would be already radioactive in nature. This limitation became more remarkable in 1919 when Rutherford opened the new field of nuclear transformations when he studied the reaction  $N^{14} + \alpha \rightarrow O^{17} + p$  (a nucleus of Nitrogen absorbs an  $\alpha$  particle, emitting a proton and transforming it into a Oxygen nucleus). The radioactive sources available were too weak to continue penetrating into the mystery of atomic nucleus. One gram of radium produced 37.000 million of  $\alpha$  particles per second (apart from other products of the disintegration) of which 1 from 100.000 brought a transformation; too few to be able to separate chemically the generated substances to examine the products. Furthermore, the energy of those  $\alpha$  particles were just enough to be able to surpass the electric repulsion of the nucleus to which they were directed. It was urgent to find machines which would be able to increase the number and velocity (energy) of the particles. And because they were charged, one way was to put them inside great potential differences.

Before the WW1 no technical means existed to progress so much in that direction. From the 1920's already began to appear some apparatus. In Cambridge, John Cockcroft and Ernest Walton used a voltaic multiplier which provided to them 125 Kv (1Kv=1000V) to be the first to observe in 1932 the artificial disintegration of atoms of lithium in two  $\alpha$  particles. In the department of Terrestrial Magnetism of the Carnegie Institute of

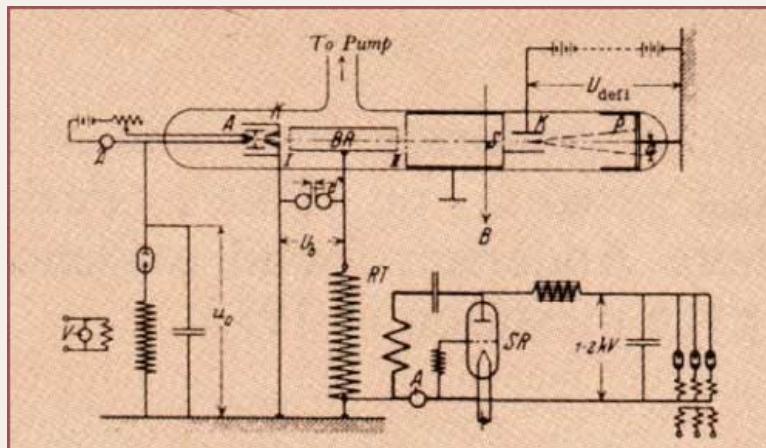
Washington, Merle Tuve in 1928 used a transformer invented by Nikola Tesla with which he reached 3 million Volts. With the collaboration of Gregory Breit, Tuve used this method to accelerate protons and electrons. After working during a short time in an electric power plant in Alabama, Robert J. Van de Graaf designed his electrostatic generator. After spending one year in Oxford with a studentship, he conceived a device to build up a high voltage using simple principles of electrostatics. A belt of insulating material carries electricity from a point source to a large insulated spherical conductor. Another belt likewise delivers electricity of the opposite charge to another sphere. The spheres build up a potential until the electric field breaks down the air and a huge spark "arcs" across. While a postdoctoral fellow at Princeton, he adapted it (where he arrived in 1928) for the acceleration of particles. In a short time his prototype provided the 80 Kv and in 1931 was already possible to provide 750 Kv and using two spheres it was possible to achieve a potential difference of 1,5 Mv (1Mv=1000Kv). In 1937 already existed Van de Graaf generators of 5 meters high which were able to provide 5Mv. By increasing the radius of the spheres, Van de Graaff could reach higher voltages without arcing. The maximum voltage in theory, in megavolts, roughly equalled the radius of the sphere in feet. He was soon planning a pair of spheres 15 feet across. In 1933 Tuve and his team used a Van de Graaf generator of 1 Mv together with the discharge tube which they improved and they observed the disintegration of lithium and boron.



This electrostatic generator (Van de Graaf generator) atom-smasher was built at the Carnegie Institution in Washington D.C., and used between 1920 and 1940. The cross-section shows a spherical conductor, its insulating supports, and tube in which particles are accelerated. The charging belt is shown cut-off near the top and bottom. This structure was also the talk of "death-rays".

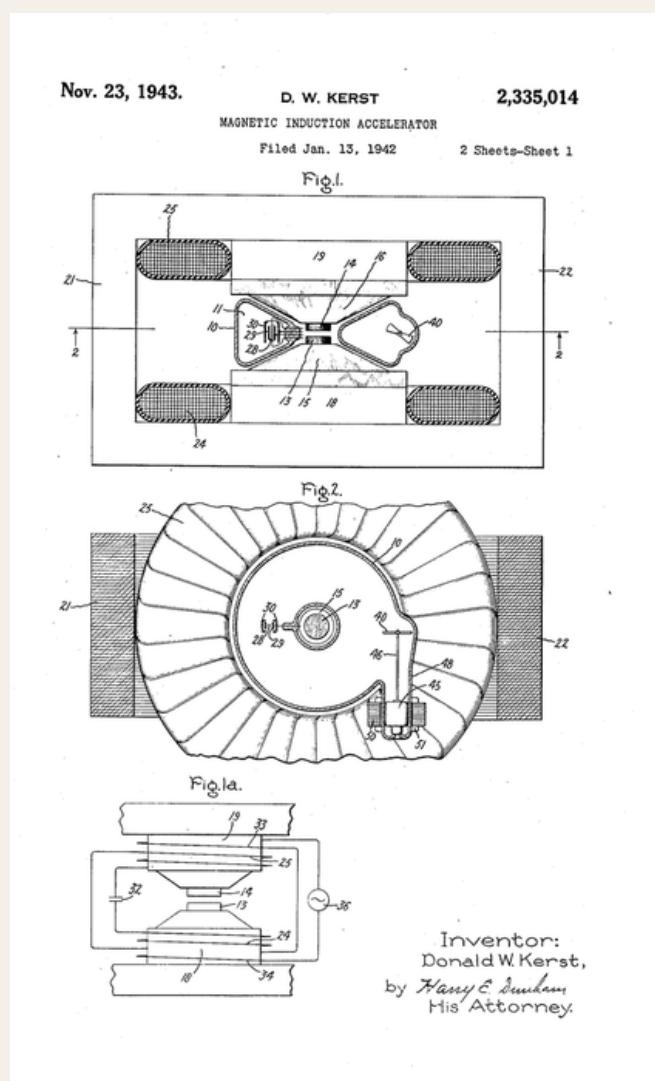
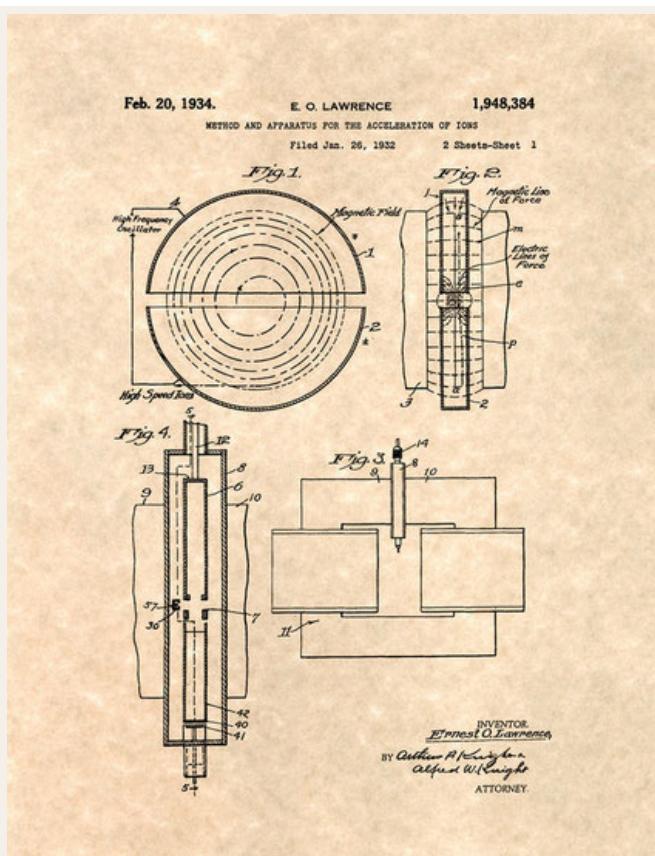
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The most important initiative which ended up developing more and marking an era of physics was that associated to American physicist Ernest Orlando Lawrence. The difficulties of maintaining high voltages led several physicists to propose accelerating particles by using a lower voltage more than once. After graduating in Yale Lawrence was hired as a professor associated to physics for Berkley in 1928. Lawrence learned of one such scheme in the spring of 1929, while browsing through an issue of *Archiv für Elektrotechnik*, a German journal for electrical engineers. Lawrence read German only with great difficulty, but he was rewarded for his diligence: he found an article by a Norwegian engineer, Rolf Widerøe, the title of which he could translate as "*On a new principle for the production of higher voltages.*" The diagrams explained the principle and Lawrence skipped the text. This article inspired his idea of a particle accelerator, the first cyclotron.



The first radio frequency linac for acceleration of heavy ions was designed by Rolf Widerøe in 1928. 1 MHz, 25KV rf source to accelerate potassium ions up to 50 KeV. Optimum gap distance  $d = \beta\lambda/2 = \beta c/2f$

Rolf Widerøe, Gustav Ising, Leó Szilárd, Donald Kerst, and Ernest Lawrence are considered pioneers of the particle accelerators, conceiving and building the first operational linear particle accelerator, the betatron, and the cyclotron.



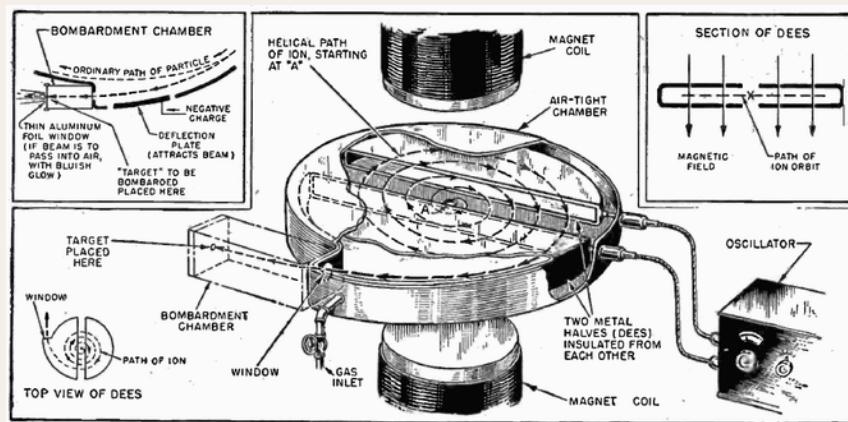


Diagram of a cyclotron, a particle accelerator invented by Ernest O. Lawrence in 1932 and widely used from the 1930s to the 1950s. It consists of a pair of "D" shaped sheet metal electrodes called "Dees" placed face to face inside a vacuum chamber, between the poles of an electromagnet. An oscillating radio frequency voltage of several thousand volts is applied to the dees. Atomic particles to be accelerated, such as protons are released in the center. The magnetic field causes them to travel in a spiral path from the center to the rim of the dees, being accelerated each time they pass from one electrode to the other. When the particles reach the rim they pass out of the dees through a small gap and strike a target. In this diagram the electromagnet pole pieces are not shown full size; they must be at least as big as the dees to create a uniform field. Caption: How the cyclotron works. Size of the magnets has been kept down to show the path of the electron

## The New Art of Projecting Concentrated Non-Dispersive Energy Through Natural Media

Whether Tesla's idea was ever taken seriously is still a matter of conjecture. Most experts today consider his idea infeasible. Though, his death beam bears an uncanny resemblance to the charged-particle beam weapon developed by both the United States ([Beam Experiments Aboard Rocket](#)) and the Soviet Union during the cold war.

At the end of 1930s many conflicts were giving enough evidence that the dark future of war would soon break out in Europe. Nikola Tesla tried to convince the military to generate interest to get the fundings for his "peace beam", but it seems that he didn't receive the attention that he was hoping. After some attempts, he decided to not give up and he sent an elaborate technical paper, including diagrams, to a number of Allied nations including the United States, Canada, England, France, the Soviet Union, and Yugoslavia.

A paper surfaces in 1983 which is the first to show an actual plan for a weapon. An analysis of the paper by the Tesla museum in Belgrade determines them to be authentic. The paper, which is entitled "[New Art of Projecting Concentrated Non-Dispersive Energy Through Natural Media](#)" is the only known paper Tesla ever wrote about particle beam weaponry.

The most interested country of all which received Tesla's proposal, the greatest interest came from the Soviet Union. In 1937 (agreement dated in April 20, 1935) Tesla presented a plan to the Amtorg Trading Corporation, an alleged Soviet arms front in New York City. Two years later, in 1939, one stage of the plan was tested in the USSR and Tesla received a check for \$25,000. It is highlighted from the released unclassified FBI archives (Part 1 page 185). Contained within the extract Tesla agreed to supply

plans, specification, and complete information on a method and apparatus for producing very small particles in a tube open to air, for increasing the charge of the particles to the full voltage of the high potential terminal, and for projecting the particles to a distances of a hundred miles or more. The maximum speed of the particles was specified as not less than 350 miles per second. The receipt of \$25,000 fee for this disclosure was acknowledged by Nikola Tesla and by A. Bartanian of the Amtorg Trading Corporation.

During World War II, Amtorg handled the flow of military supplies to the Soviet Union, including armaments, raw materials, food, and uniforms under the Lend-Lease program.

During the Cold War years, the scope of Amtorg's enterprise was more limited, but it continued to conduct its business at 49 West 37th Street, in New York City, maintaining a skeleton staff. As an arm of the Soviet state, Amtorg, at that time located at 355 Lexington Avenue in New York City, was targeted in two bombing attempts, in 1971 and 1976, by members of the Jewish Armed Resistance, an extremist group affiliated with the Jewish Defense League.

Surrounded by continuing controversy, Amtorg survived the Cold War but did not survive the collapse of the Soviet Union, quietly disappearing in 1998.

In a letter that was written to J. P. Morgan, Jr. on November 29, 1934, Tesla described the weapon:

*"I have made recent discoveries of inestimable value... The flying machine has completely demoralized the world, so much that in some cities, as London and Paris, people are in mortal fear from aerial bombing. The new means I have perfected afford absolute protection against this and other forms of attack. ... These new discoveries, which I have carried out experimentally on a limited scale, have created a profound impression. One of the most pressing problems seems to be the protection of London and I am writing to some influential friends in England hoping that my plan will be adopted without delay. The Russians are very anxious to render their borders safe against Japanese invasion and I have made them a proposal which is being seriously considered".*

During the period in which the negotiations were being carried on, Tesla claimed that efforts had been made to steal the invention. His room had been entered and his papers had been scrutinized, but the thieves, or spies, left empty-handed. He said that there was no danger that his invention could be stolen for he had at no time committed any part of it to paper. The blueprint for the Teleforce weapon was all in his mind.

In 1940 Tesla estimated that each station would cost no more than \$2,000,000 and could have been constructed in a few months.

#### CNN Special Report 1985 Electromagnetic Frequency



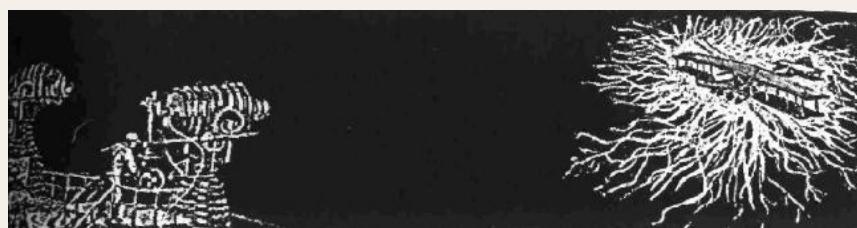
## Tesla Weapons



### Other controversial death ray proposals and possible frauds



Death ray proposal by Harry Grindell Matthews



Death ray proposal by Harry Grindell Matthews

### "Tesla's Views on Electricity and the War" - The Electrical Experimenter - August, 1917

"The 'Ulivi ray' really was transplanted from this country to Italy," asserted Dr. Tesla. "It was simply an adaptation of my ultra-powerful high-frequency phenomena as carried out in Colorado and cited previously. With a powerful oscillator developing thousands of horsepower it would become readily possible to detonate powder and munition magazines by means of the high frequency currents induced in every bit of metal, even when located five to six miles away and more. Even a powder can would have a potential of 6,000 to 7,000 volts induced in it at that distance.

"At the time of those tests I succeeded in producing the most powerful X-rays ever seen. I could stand at a distance of 100 feet from the X-ray apparatus and see the bones of the hand clearly with the aid of a fluoroscope screen; and I could have easily seen them at a distance several times this by utilizing suitable power. In fact, I could not then procure X-ray generators to handle even a small fraction of the power I had available. But I now have apparatus designed whereby this tremendous energy of hundreds of kilowatts can be successfully transformed into X-rays."

Tesla was probably wrong in this case when he stated that Giacomo Ulivi copied his idea knowing that Ulivi's death rays were finally considered a fraud after many attempts in different places to avoid his excuses to demonstrate his invention to the public without conditions but also because he had the bad habit to disappear in the right moments (See also: <http://trove.nla.gov.au/ndp/del/article/6426458?searchTerm=Giulio%20Ulivi&searchLimits=>).

The death ray proposal by Harry Grindell Matthews had almost the same reputation as the false Italian inventor Giacomo Ulivi because he never had been able to demonstrate to the military of the UK or to any other witness, but it seems that there has always been some doubt as to whether Matthews ever actually invented a 'Death Ray' knowing that some documents held in the French patent office show a patent registered for the 'Projection à distance Phénomènes invisibles de haute fréquence électrique' - or the 'remote projection of invisible high frequency electricity' (seeking source) in other words, the 'Death Ray' - filed in October 1924 under the name Eugene Royer, Matthews' close associate.

## Nazi developed "death ray" Weapon

More information: " [Nazi developed "death ray" Weapon](#)."

The following is a set of data related to the Nazi project.

Death-Rays as Life-Savers in the Third Reich by Pedro Waloschek (the description which appear in the book about Tesla's "death ray" is wrong as it was not supposed to use electromagnetic waves or wireless energy and in this case Tesla never stated that particles should travel faster than light):

Today we know that the 'death rays' made famous through science fiction literature and cinema were never actually deployed, and certainly not during World War II. The extensive literature on secret weapons provides us with very few mentions of 'death rays', and most of these refer to desperate publicity stunts by the German leadership towards the end of the war. However, several proposals were made, which led to the establishment of real research and development projects that aimed (or hoped) to achieve the development of 'death rays', or at least to gather

some of the knowledge considered indispensable for the realisation of such weaponry. This does not belong to the world of conjecture; there is real evidence of activity, which can be reconstructed thanks to archive documents and witness statements.

Towards the end of the war, scientists in Germany tried to make use of what funds were still available for research work. Some of these projects were sensible, others less so. They also used such projects as pretexts to save their employees from war services (see Schiebold) or from deportation in concentration camps (see Schmellenmeier). Most of them were already thinking in terms of post-war scientific or commercial applications. So they were supported and encouraged by industrial firms like Brown Boveri (BBC), Philips and Siemens, which expected a future market for X-ray-producing machines for hospitals. And they were in strong competition with US-firms like General Electric.

However, in order to obtain the materials, financial support and services required for a project, several scientists found it expedient to declare that their work was of vital importance to the war effort. Their chances of success fared even better if they could assert that their developments were indispensable for producing a specific weapon, which could prove decisive for a conclusive (and somewhat miraculous) victory. Sometimes these proposals were explicit, and 6 unambiguous (albeit secret) reports were submitted to the authorities in writing. But in other cases suggestions were raised only orally, and the paperwork that was presented merely served to hide the military purpose of these projects behind a smokescreen of civilian intent. To some extent the scientists were able to play this game thanks to the Nazi leadership's lack of technical and scientific understanding. Furthermore, it was unlikely that experts with opposing viewpoints would raise any objections to a project considered essential to the war effort since this would have been considered in general as rank defeatism.

Nevertheless the world was afraid of Hitler's miracle weapons and particularly his death rays. What was the truth behind these death rays? And how had the German Luftwaffe and other authorities been convinced of the case for making substantial research and development efforts to produce such death rays? This is the area under discussion. The subject began to fascinate me in my youth.

My aim is to present the collection of data I have accumulated over many years, and make it accessible to others in a way that I hope will be interesting and easy to understand. I have been particularly interested in the lives and problems of the people involved in the 'death ray' projects, and I hope that the information I present will contribute to the elimination of some of the myths and prejudices that arose after the war, mainly as a result of the (sometime justified) silence of the participants.

#### German "death ray" weapon wrecked - The argus, Melbourne - 8 sept, 1944

*This concrete structure in France was intended to house a Nazi secret weapon, French civilians believe. Five thousand workmen were engaged on it day and night, but after 35 attacks by the RAF the project was abandoned. Construction men hinted that a death ray machine capable of stopping aircraft engines in flight and burning London to the ground was being installed. (Canadian WIB Radio photo received by Beam Wireless.)*

<http://www.arcforums.com/forums/air/index.php?showtopic=215575>

From "Restricted Films of WWII":

*"An incomplete German Block House near Vatan, France. (About 240Km south of Paris) According to civilians, the nazis hoped to house electrical apparatus to send out beams that would stop aircraft in flight. The structure is 300' long, 200' wide, and some four stories high. Steel doors meant to operate on rollers are 8' thick and 24'-25' high. Allied aircraft pounded the block hous and it's environs with 1000lb bombs."*

Restricted Films of WWII: German "death ray" weapon facility wrecked - T...



Aerial view of the heavily bombed bunker - Blockhaus d'Éperlecques - Open to the public since 1973 and listed "Ancient Memorials" in 1985.

[http://www.456fis.org/NAZI\\_SECRET\\_WEAPON\\_OF\\_1944.htm](http://www.456fis.org/NAZI_SECRET_WEAPON_OF_1944.htm)

Mechanix Illustrated  
April 1944

The British government was spooked back in 1935. Not because of Hitler's air force or his infantry. Because of his death ray.

Newspapers screamed that the Nazis might have a super-weapon that could incinerate living tissue or detonate a bomb at long distance. Flooded by letters begging for a response, the British Air Ministry asked prominent physicist Robert Watson-Watt to see if a radio-wave-based death ray was feasible.

Within ten days Watson-Watt reported that such a weapon was unlikely. But using radio waves to locate an approaching bomber was a real possibility. And that's how radar was born.

Robert Watson-Watt is given the credit for inventing the radar. In fact, this credit should go to the German engineer Christian Hulsmeyer who in 1904, using patented an early warning system for shipping. He, in turn, used a discovery by Heinrich Hertz who had discovered in 1888 that radio waves could be bounced off objects.

In 1935, Robert Watson-Watt - a Scottish physicist - was asked by the Air Ministry to investigate the possibility of creating a "death-ray" weapon using radio waves. Watson-Watt was working at the National Physical Laboratory in Slough.

Watson-Watt did not create a "death-ray" weapon but he did find that his radio transmitters could create an echo from an aeroplane that was over 200 miles away. This information would give the Royal Air Force an early warning of an attack by enemy fighters. By the time an enemy force was nearing the coastline, fighters would be airborne and ready to fight. The enemy would have lost the element of surprise. This invention by Watson-Watt was vital to the RAF during the Battle of Britain in 1940.

In 1940, aided by John Randall and Henry Boot from Birmingham University, Robert Watson-Watt invented the cavity magnetron. This produced a compact source of short-wave radio waves and allowed Fighter Command of the RAF to detect incoming enemy planes from a much greater distance thus giving the pilots more time to organize themselves.

### Heroes and Weapons of WWII : 01. The Men Who Invented Radar



[The Quantum Exodus: Jewish Fugitives, the Atomic Bomb, and the Holocaust](#) - by Gordon Fraser - 2012 - Pg 133-134:

A network of scientific supporters sprung into action to convince the authorities that Gans, an expert in magnetism, would be more profitably employed in [Schmellenmeier](#)'s laboratory. A letter from no less than SS Reichsführer Heinrich

Himmler appeared to settle the matter. The enfeebled Gans was assigned a new objective. More than a decade before, an obscure idea in a German research journal had led the US scientist Ernest Lawrence to invent cyclotrons. Machines to whirl protons and other subatomic fragments and accelerate them to high energies.

Schmellenmeier's idea was to investigate whether this new machines could be made into weapons. The effectiveness of conventional German antiaircraft guns had been reduced by Allied bombers flying high, out of range of the guns, and wreaking increasing havoc on German cities. Perhaps Schmellenmeier's new weapon could hit such targets in the stratosphere. The idea was to whirl electrons round in a ring to create intense microwave radiation. This would then be beamed at enemy aeroplanes and interfere with engine ignition or blind the crew. The device was called the "Rheotron". On a paper, it sounded very impressive, a new superweapon to complement the V1 and the V2 "Vergeltungswaffen" (retaliation weapons) then being readied. However the idea of such "death ray" was not new. In 1935, Britain had set up a committee to study the new methods of air defence. Soon it appeared that the beam power needed was unattainable, but the technology was soon refocused into what became to known as "radar".

Gans had been rescued once from fate in a concentration camp, but was still not safe. His luck finally seemed to have run out in the summer of 1944, when he was arrested and taken to the Grosse Hamburger Strasse, Berlin's assembly point for Jews en route to concentration camps. Again, a rescue mission swung into action in the last minute. By now, with the fate of the Nazis becoming clear, some high-level SS members were eager to fabricate some protection for themselves by helping Jews instead of killing them. The Rheotron was an elaborate bluff in several levels. First it was a paper deterrent, but it also had a secondary role as a cover for Jewish scientists, notably Gans, who suspected that the idea would not work. Later that year Schmellenmeier's equipment was evacuated with the instruction that "in case of military defeat, the Jew Gans is to be liquidated. However the American forces arrived first.

### The Invention of Radar



Ernst Schiebold (1894-1963) was a German mineralogist who has rendered outstanding services to the material examination using X-rays. Von Schiebold sold Milch of the Air Force the idea that it was possible to build an X-ray searchlight which would cause burns on the crews of Allied bombers at altitudes up to 30,000 feet. The source of the X-rays was to be a betatron.

<http://www.abovetopsecret.com/forum/thread817832/pg1>  
<http://www.forbiddenknowledgetv.com/videos/911--false-flags/911-proof-of-laser-weapons-part-3.html>

During WW2 the German electronics firm Siemens developed a particle beam weapon for the Luftwaffe. It was invented by Prof Max Steenbeck in 1935. Heinz Schmellenmeier, Richard Gans and Fritz Houtermans were leading figures in the project.

How the machine worked was that it interrupted the magnetos of engines in Allied bombers and brought aircraft down to lower altitudes into the reach of FLAK batteries.

Norwegian born Dr Rolf Wideroe wrote in his autobiography that he worked on a particle accelerator X-Ray transformer for this project at Hamburg in 1943. The Philips subsidiary Valvo also participated and much of the engineering was performed by CHF Muller & Co. Wideroe later rescued the device from the rubble of Dresden and delivered it to General Patton's 3rd Army at Burggrub on 14 April 1945.

A second rival device, Ernst Schiebolds 'Röntgenkanone' was developed at Großostheim south of Frankfurt. This employed a particle accelerator cupped from beneath by a Beryllium parabolic mirror with a bundle of nine beryllium rods as an anode at its core. the entire device was steerable at Allied bomber formations. The Company Richert Seifert & Co was largely responsible for its manufacture.

These were not lasers. They directed hard radiation at aircraft and were the forerunners of Star wars weapons today.

<http://www.answers.com/topic/directed-energy-weapons>  
<http://en.wikipedia.org/wiki/Wunderwaffe>

In the later phases of World War II, Nazi Germany increasingly put its hopes on research into technologically revolutionary secret weapons, the Wunderwaffen.

Among the directed-energy weapons the Nazis investigated were X-Ray Beam Weapons developed under Heinz Schmellenmeier, Richard Gans and Fritz Houtermans. They built an electron accelerator called Rheotron (invented by Max Steenbeck at Siemens-Schuckert in the 1930s, these were later called Betatrons by the Americans) to generate hard X ray synchrotron beams for the Reichsluftfahrtministerium (RLM). The intent was to pre-ionize ignition in Aircraft engines and hence serve as anti-aircraft DEW and bring planes down into the reach of the FLAK. The Rheotron was captured by the Americans in Burggrub on April 14, 1945.

Another approach was Ernst Schiebolds 'Röntgenkanone' developed from 1943 in Großostheim near Aschaffenburg. The Company Richert Seifert & Co from Hamburg delivered parts.

The Third Reich further developed sonic weaponry, using parabolic reflectors to project sound waves of destructive force. Microwave Weapons were investigated together with the Japanese (see also: [Japanese radar and related weapons of world war 2](#)).

<http://www.cdvandt.org/CIOS-XXVIII-31.pdf>  
<http://www.quora.com/Sy-Gunson>

Rolf Wideroe said in his autobiography:

*"It appears that Dr. Schiebold hawked his ideas about. He spoke to physicists who must have thought him a hopeless case, but he also tackled some influential people in official capacities who were not in a position to make informed judgements. Most people probably dismissed him as a harmless lunatic, but some must have been convinced because the Air Force, i.e. the German Aviation Ministry (RLM) and Command of the Luftwaffe, provided a certain amount of support for his 'death ray'.*

*In order to conduct some test experiments for this 'death ray', a still unused and unpacked X-ray apparatus with a high voltage supply of a little over one million volts (made by means of a sort of cascade circuit), was taken from a hospital in Hamburg to a small military airport called Groß-Ostheim (today 'Großostheim') in the region of Hanau. If I remember rightly, Richard Seifert organized this tests and Hollnack was their administrator. However, both engineers and technicians quickly understood that the danger to themselves operating the machine on the ground was far greater than to the pilots and bombs in the enemy aircraft.*

*Still, a ray-transformer or betatron could produce X-rays of many million volts and in doing so one could, in principle (purely on the grounds of the laws of physics), improve the 'bundling' of the beam with an increase of energy. To a certain extent, the effective range could be increased. This seemed to be the reason for the German Air Force's interest in the betatron. I wasn't really supposed to know anything about it, and we only ever talked about the betatron in terms of its importance to medicine. As it turned out this was actually correct.*

*By November 1943 I had developed a three-phase plan which provided first for the construction of a 15 MeV betatron in Hamburg, then a 200 MeV betatron and finally an experimental station in Groß-Ostheim for even larger installations... [Wideroe comments that only the Hamburg machine came to fruition however Allied intelligence refers to a working machine at Groß-Ostheim disrupting Allied bombers therefore Wideroe may have been out of the loop on subsequent developments]*

*Our work in Hamburg soon confirmed that the step from Kerst's 2.3 MeV machine (USA) to our planned 15 MeV ray-transformer was the right one. Of course, all we wanted in principle was to achieve as much energy as possible, but at 15 MeV we did not expect any imminent problems with the iron yoke (which was very similar to that of an ordinary transformer). However, these problems did appear when we built the first 31MeV machine for Brown Boveri in Baden, as I shall explain later."*

Dr. Schiebold's 'Röntgenkanone' was captured by Patton's Army at Burggrub near Beyreuth about 14 April 1945. It disappeared into US black projects in New Mexico brought back to USA by Project LUSTY.

<http://jansrose.blogspot.com.es/2012/03/death-rays-and-ball-lightning.html>

From Wideroe's online autobiography, The Infancy of Particle Accelerators:

*I eventually found out why the German Air Force was so interested in the betatron. Physicist Dr. Schiebold from Leipzig, a specialist on non-destructive testing of materials using X-rays among other methods (after the War he became professor in Magdeburg) had had the idea that it would be possible to build an X-ray tube....[that] would cause the X-rays to be emitted in a narrow bundle. With sufficiently high voltage it would then be possible to achieve high radiation intensities at long distances. Thus it may even be possible to kill the pilots.*

*In order to conduct some test experiments for this 'death ray', a still unused and unpacked X-ray apparatus with a high voltage supply of a little over one million volts (made by means of a sort of cascade circuit), was taken from a hospital in Hamburg to a small military airport called Groß-Ostheim (today 'Großostheim') in the region of Hanau.*

Gunson states that "ball lightning" was an artifact of the ray when it was used to disable aircraft in flight. I have heard this claim before, though I can't remember where. However, mention of ball lightning always rings a resounding "ding! ding! we have a winna!" in my head.

<http://en.wikipedia.org/wiki/Betatron>

A betatron is a cyclic particle accelerator developed by Donald Kerst at the University of Illinois in 1940 to accelerate electrons, but the concepts ultimately originate from Rolf Widerøe, whose development of an induction accelerator failed due to the lack of transverse focusing. Previous development in Germany also occurred through Max Steenbeck in the 40s.

The betatron is essentially a transformer with a torus-shaped vacuum tube as its secondary coil. An alternating current in the primary coils accelerates electrons in the vacuum around a circular path. The betatron was the first important machine for producing high energy electrons.

Betatrons were historically employed in particle physics experiments to provide high energy beams of electrons—up to about 300 MeV. If the electron beam is directed at a metal plate, the betatron can be used as a source of energetic x-rays or gamma rays; these x-rays may be used in industrial and medical applications (historically in radiation oncology). A small version of a Betatron was also used to provide electrons converted into hard X-rays by a target to provide prompt initiation of some experimental nuclear weapons by means of photon-induced fission and photon->neutron reactions in the bomb core.

The Radiation Center, the first private medical center to treat cancer patients with a betatron, was opened by Dr. O. Arthur Stiennon in a suburb of Madison, Wisconsin in the late 1950s.

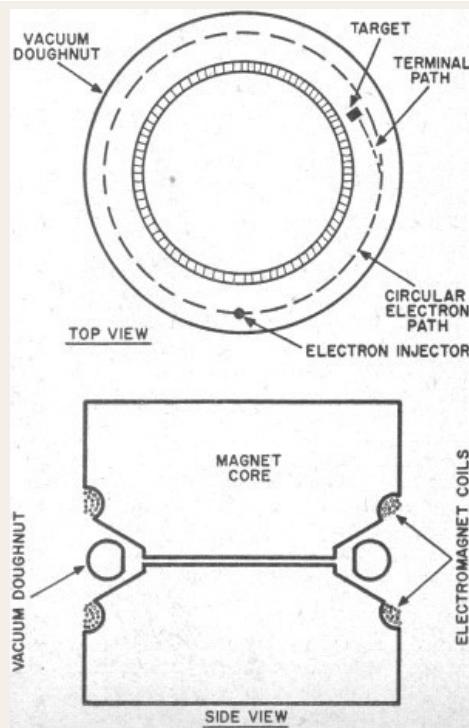


Fig. ? The betatron. Note how the pole pieces go into the center of a vacuum "doughnut."

### American Atomic Bomb testing!! (a Betatron bomb)



The George device used a Mk-5 bomb assembly and was intended to gather additional data on the initiation time vs yield curve. A device used of an external initiator as opposed to an internal one activated by the implosion shockwave. This device known as a betatron used electrons to generate high energy X-rays inducing photo-fission in the core to initiate the chain reaction. The betatron allowed very accurate control of initiation time. The test device had a diameter of 100cm and weighed 1224kg, the cloud reached 11,000m. The shot was postponed due to unfavorable weather conditions, and was also moved to a different area of the Nevada Test Site due to residual radiation from the previous shots Easy and Fox.

<http://nuclearweaponarchive.org/Usa/Tests/Tumblers.html>

Operation Tumbler-Snapper  
George  
1 June 1952